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Mechanisms of the effect of dimephosphone on synaptic transmission in the frog neuromuscular junction

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Abstract

We studied the influence of dimephosphone, an organophosphorus drug with a broad spectrum of therapeutic effects on the peripheral and central nervous systems, on postsynaptic end-plate currents (EPC) in the frog neuromuscular junction. Dimephosphone was demonstrated to decrease in a voltage-independent manner the EPC amplitude and to prolong the EPC decay. These effects are not related to inhibition of acetylcholinesterase. We propose a theoretical interpretation of the observed phenomena based on the model of blockade of an open ion channel of the acetylcholine receptor and conclude that postsynaptic receptors are one of the most probable targets for the action of dimephosphone.

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Keywords

Acetylcholine receptor, Blockade of an open ion channel, Dimephosphone